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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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09/678,318 10/03/00 STEARNS

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023494 MMC2/1004  
TEXAS INSTRUMENTS INCORPORATED  
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EXAMINER

BROCK II, P

ART UNIT

PAPER NUMBER

2815

DATE MAILED:

10/04/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

**Office Action Summary**

Application No.

09/678,318

Applicant(s)

STEARNS ET AL.

Examiner

Paul E Brock II

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 September 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 and 19-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 20-27 is/are rejected.
- 7) ☒ Claim(s) 19 and 28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/250,641.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1 – 2 and 20 – 21 are rejected under 35 U.S.C. 102(a) as being anticipated by Ohsawa (US 2001/0014491 A1).

Ohsawa discloses in figure 3j a method of laying out traces for connection of bond pads of a semiconductor chip to a ball grid array disposed on a substrate.

With regard to claim 1, Ohsawa discloses in figure 3j providing a substrate having a surface with a plurality of rows and columns of ball pads and having a solder ball secured to each of the ball pads. Ohsawa discloses in figure 3j providing a plurality of pairs of traces on the surface, each trace of each of the pairs of traces extending to a different one of the ball pads and extending to ball pads on a plurality of the rows and columns, each trace of each of the pair of traces being spaced from the other trace of the pair by up to a ball pitch, being maximized for identity in length and having up to one ball pitch difference in length and being maximized for parallelism and spacing.

With regard to claim 2, it is inherent in the method of Ohsawa that each of the traces of the pair is further maximized for identity in cross-sectional geometry.

With regards to claims 20 and 21, Ohsawa inherently discloses that the substrate is a printed wiring board substrate.

*Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3 – 4 and 22 – 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohsawa.

With regard to claims 3 – 4, Ohsawa does not disclose applying a differential signal pair to at least one of the pair of traces. Applying differential signal pairs is well known in the art. It would have been obvious to one of ordinary skill in the art at the time of the present invention to apply a differential signal pair to at least one of the pair of traces in order to have a lower output voltage from the pair as is well known in the art.

With regards to claims 22 – 23, Ohsawa inherently discloses that the substrate is a printed wiring board substrate.

5. Claims 5 – 8 and 24 – 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohsawa as applied to claims 1 – 4, respectively, above, and further in view of Karnezos (USPAT 5409865, Karnezos).

With regard to claims 5 – 8, Ohsawa does not disclose including a step of providing a further surface insulated from the surface with some of the traces being on the further surface.

Karnezos teaches in the abstract section a step of providing a further surface insulated from a surface of a substrate, a plurality of traces are disposed on the further surface. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the insulated further surface of Karnezos in the method of Ohsawa in order to provide a generally flexible dielectric film bearing a pattern of conductive traces as stated by Karnezos in the abstract.

With regards to claims 24 – 27, Ohsawa inherently discloses that the substrate is a printed wiring board substrate.

#### *Response to Arguments*

6. Applicant's arguments with respect to claims 1 – 8 and 20 – 27 have been considered but are moot in view of the new ground(s) of rejection.

#### *Allowable Subject Matter*

7. Claims 19 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record, either singularly or in combination, does not disclose or suggest at least the step of a third pair of traces extending to ball pads in a third row of a second and third columns and disposed in parallel between the second and third columns wherein there are no other leads disposed between the second and third columns.

*Conclusion*

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Takebe discloses circuit traces and solder ball bond pad where are each of a pair of traces being spaced from the other trace of the pair by up to a ball pitch, being maximized for identity in length and having up to one ball pitch difference in length and being maximized for parallelism and spacing .

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul E Brock II whose telephone number is (703)308-6236. The examiner can normally be reached on 8:30 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703)308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Paul E Brock II  
October 1, 2001



EDDIE LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800